BARK BEETLE CONDITIONS

NORTHERN REGION

2008

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CONDITIONS IN BRIEF

A relatively wet winter in 2007-2008, coupled with another dry summer, resulted in a mix of weather conditions, some of which were good for land managers and homeowners, others for bark beetles. Wetter conditions in the spring have probably kept Douglas-fir beetle and pine engraver beetle activity at relatively low levels; however, there were increases in both in 2008. But a warm and dry summer continued to make life good for some bark beetle species—and they took advantage of it!

A few bark beetle populations expanded nearly exponentially in some areas; but at least part of the overall increase was a result of having surveyed more infested areas in 2008 than in 2007. In total, we flew more than 36 million acres in 2008, compared to about 24 million in 2007. Most forested areas in northern Idaho and western Montana were flown. Some exceptions were a few wilderness areas, northern and western portions of the Kootenai, eastern part of the Flathead, and small portions the Gallatin and Helena National Forests (NF). The eastern half of the Flathead Indian Reservation (IR) was not surveyed, nor were the Crow and Northern Cheyenne IRs.

Mountain pine beetle populations, already high in the west-central portion of Montana, increased at rates not recorded in a quarter-century. On parts of the Helena NF, we recorded new attacks to previous-year attacks at a ratio of 10 to 1. In other infested areas, populations are finally declining due to host depletion. Beetle-infested areas increased significantly in many locations, and populations expanded into some previously un-infested areas—notably ones on the Deerlodge, Beaverhead, and Helena NFs. In some stands, where beetles have been found for a few years, intensity has declined markedly. Such decreases were recorded in some infested areas on the Flathead, Lolo, eastern portion of the Deerlodge, and Nez Perce NFs. In summary, mountain pine beetle-infested acres in logdepole pine stands nearly tripled, more than doubled in ponderosa pine stands, and almost doubled in 5-needle pines stands in 2008; but some of that increase resulted from much more area being surveyed. Because aerial detection surveys (ADS), as good as they are, are not always complete, and record year-old data at best; we supplemented ADS data with ground-collected data in as many areas as we practicably could.

Douglas-fir beetle-infested acres increased somewhat in both northern Idaho and western Montana, but again, that may be a function of more infested areas being surveyed. At a few locations in northwestern and central Montana, and central Idaho, populations remained at higher-than-normal levels; however, in other areas they have declined substantially. Increases were noted on the Flathead, Helena, and Lolo, Nez Perce and Clearwater NFs. Overall, infested acres increased by about one-third in 2008 over levels

recorded in 2007. In most areas, however, Douglas-fir beetle populations remain at nearly endemic levels.

Grand fir mortality attributable to fir engraver increased markedly in 2008—to levels nearly 10 times those recorded in 2007. Most of those infested stands were located in northern Idaho, and once again many were recorded in areas not surveyed in 2007. In many areas, beetle populations were recorded at levels not seen for several years.

Western balsam bark beetle-killed subalpine fir was mapped on considerably fewer acres than in 2007; but a few of the more-often infested areas were not surveyed. Still, notable beetle-caused mortality was found in some areas.

Mortality in ponderosa pine stands, attributed to pine engraver and western pine beetles both increased to notably higher levels than recorded in 2007. Both were unanticipated because of the relatively normal amounts of moisture received in the past couple of years—especially in North Idaho.

Fire activity in most of the Region was at a several-year low; so as we look forward to the field season of 2009, we'll not have the same concerns for beetles building in fire-affected areas as we have for much of the past decade. Still, cumulative effects of a prolonged drought that may be approaching 8 years long in parts of the Region are taking their toll and making conditions more conducive to bark beetle population expansion. Dependent almost entirely on weather for the remainder of the winter and into spring; we anticipate some bark beetle populations could rebound in 2009. Mountain pine beetle populations, more reflective of host conditions than weather, likely will continue to expand into susceptible host stands. Our abilities to accurately predict bark beetle activity and resultant damage are not as keen as we would like. Still, there are indications that 2009 might be another good year to be a bark beetle.

Mountain Pine Beetle (MPB):

The infested area mapped in 2008 more than doubled from 2007 levels. We know populations increased significantly in west central Montana; but at least a portion of the increase was attributed to the fact that many more infested areas were flown in 2008. Some areas were flown in northern Idaho and western Montana that had not been surveyed since 2005. Some areas were not flown, but in all, we flew about 12 million more acres in 2008 than we had in 2007. Most of northern Idaho exhibited increases in infested area. The Clearwater and Coeur d'Alene NFs both showed significant increases in infested area. Several areas that have been heavily infested for several years are still harboring widespread outbreaks, but at much reduced intensities. The Nez Perce NF, not surveyed in 2007, still recorded more than 270,000 infested acres—but at rates just slightly higher than one tree per acre. That Forest, and others—such as the Deerlodge in Montana—have experienced severe amounts of host depletion. In western Montana, several formerly heavily infested areas, such as the eastern part of the Deerlodge and most of the Lolo NFs, showed a decrease or nearly static levels of infestation. The infestation increased at an incredible rate on the Helena, western Deerlodge and

Beaverhead NFs, however. In those areas, infestation levels in 2008 were 3-4 times ones recorded in 2007.

Acres on which beetle-caused mortality was recorded, in all species and on all ownerships, increased dramatically, to more than 2,378,635 acres; up from just less than 892,000 acres recorded in 2007. That reflects not only significant increases in infested area—but also points to our inability to accurately record the infestation increases that had obviously occurred in 2006 and 2007. In 2005, we had recorded nearly 1.1 million acres infested in the Region. Reported acres declined during the next two years; but it is safe to assume the infestations did not decline in those years but were only partially recorded. While we know from ground surveys that the beetle flight in 2007 was extremely high—and we have noted similar increases in 2008—there was no doubt a more progressive increase from 1 million acres in 2005 to 2 million acres in 2008 than the increase in infested area from 2007 to 2008 would suggest. On those infested acres, almost 18 million trees were killed in 2007—recorded as faders in 2008. Approximately 88% were lodgepole pine. Although beetle populations have declined, and will continue to decline, in stands where all susceptible trees have been killed; they continued to expand in many areas. In some infested areas, for which ground-collected data were obtained, as many as 230 lodgepole pines per acre have been killed within the past 2-3 years. In two stands, on Deerlodge NF, beetle-caused mortality ranged from 67-87% of the lodgepole pine component. FINDIT data summaries for a few selected stands on some Forests are included with conditions descriptions for those individual Forests.

A significant increase in beetle-caused mortality was once again noted in whitebark pine stands. As a result of increased surveys, particularly on the Gallatin, Helena, Lewis & Clark, and Beaverhead NFs and in Yellowstone National Park (NP), beetle-killed whitebark pines were recorded on almost twice the number of acres in 2008 as recorded in 2007. In the Park and on Forests where infestations in whitebark pine have been extreme, ground-collected data has shown in excess of 90% of the whitebark pine has been killed within the past several years in some areas. Infestations in whitebark pine stands continued to expand in most areas surveyed, and in 2008, extended to more than 229,000 acres. More than 830,000 5-needle pines were killed in 2007 alone.

Many susceptible lodgepole, whitebark, and ponderosa pine stands remain in the Region. Unless weather patterns change to ones more favorable to their host and less conducive to beetle survival and population expansion, or management activities reduce availability of susceptible hosts, MPB populations and resultant tree mortality will continue until few susceptible host trees remain in many stands.

Douglas-fir Beetle (DFB):

DFB populations were found at virtually endemic levels in many parts of northern Idaho; however, infested areas increased significantly on the Clearwater and Nez Perce NFs, with slightly more than 5,000 and 5,400 acres infested, respectively. Most potentially infested areas were flown this year—in some cases for the first time in a couple of years; so beetle populations could have been building for some time. Most other areas with

large-diameter, older Douglas-fir remained at about the same infestation level—virtually endemic—as recorded in 2007. Few areas in northern Idaho harbored currently infested trees. We believe populations are at near-normal levels in most Douglas-fir and mixed-species stands.

In western Montana, population increases and associated beetle-killed trees were noted on the Flathead, Helena, and Lolo NFs. Most other areas surveyed had either declined or were at about the same level as recorded in 2007. While a few surveyed stands showed beetle populations and beetle-killed trees at higher-than-normal levels; most of the areas that had been heavily infested only a few years ago now exhibit nearly endemic levels. In relatively few areas did we observe atypically high numbers of trees attacked in 2008. The Bitterroot NF was the most severely impacted area following the 2000 and 2003 fires—where beetle-infested stands not affected by fire, increased to 69,300 acres in 2005. Now, infested area on the Bitterroot was recorded at less than 1,000 acres, while ground surveys and observations on the Forest continued to show decidedly marked declines in beetle populations. Western spruce budworm (WSBW) activity remained high in many parts of central Montana and northern Idaho. Severe defoliation coupled with unusually warm and dry weather could see a resurgence of DFB activity. Beetle-caused mortality in defoliated stands has already been observed on the Helena NF.

Region-wide, the infested area mapped increased to almost 34,000 acres, up from 23,900 acres recorded in 2007. Approximately 56,300 beetle-killed Douglas-fir were recorded on those infested acres. In most areas, we believe populations will continue to decline—an exception being those areas severely impacted by western spruce budworm. And of course, spring weather plays a significant role in DFB activity.

More than 2 million acres of Douglas-fir, older than 100 years, exist in the Region. Weather and stand disturbances—fire, defoliation, or wind throw—increase the likelihood of DFB outbreaks in susceptible stands. Preventive management is the key to reducing outbreak potential.

Western Balsam Bark Beetle (WBBB):

The number of acres on which subalpine fir mortality, attributed to WBBB, were recorded in 2008 decreased by almost half; but affected areas were either not all surveyed, were impacted by other factors, or were not easily distinguished from the air. There may, in fact, be several factors involved in subalpine fir decline, such as balsam woolly adelgid (BWA), root diseases, and climate change. The Gallatin NF, where beetle-caused mortality has been high in recent years was not flown in its entirety in 2008; still, more than 14,000 infested acres were reported. The most heavily impacted Forest was the Flathead, with more than 16,300 acres infested. In the areas surveyed, in 2006, more than 158,500 infested acres were reported. That figure declined to 119,350 acres in 2007, and has declined once again, to slightly more than 66,600 acres. An estimated 162,800 subalpine fir were killed in 2007. In many areas, populations appeared to be decreasing, and may continue if nearly normal moisture patterns continue through the remainder of the winter and into spring 2009.

Fir Engraver (FE):

Grand fir stands, in which FE-caused mortality was recorded, increased to an all-time high in 2004, to more than 298,650 infested acres. Improved weather over the next few years resulted in significant decreases in infested area. Now, however, in 2008 the infested area has increased markedly—to nearly the level recorded in 2004. In 2008, just slightly less than 218,000 acres were infested to some extent, and while intensity was relatively low—only about 0.5 tree per acre infested—the infested area was nearly 15 time as great as that recorded in 2007. Infested areas were greatest in northern Idaho. Grand fir stands on the Clearwater and Nez Perce NFs and Nez Perce IR accounted for more than 80% of the infested area. Both the Coeur d'Alene NF and IR also had significant increases from 2007 levels. Few stands in western Montana showed levels higher than would be considered endemic. Total infested area increased from just under 14,000 in 2007 to almost 218,000 acres in 2008; however, only 121,000 faders were recorded on those acres. The per acre infestation rate was actually higher in 2007.

We are not sure what contributed to such extreme increases in mortality—in 2004 we attributed it to excessive amounts of moisture in the preceding year. Winter 2007-2008 had such extreme snow fall in northern Idaho, it is conceivable high spring runoff was once again detrimental to many grand fir stands; but that should be more evident in 2009. Likely, increases in infested area were a combination of an increase in surveyed area, local soil conditions that reflect both excesses and deficits of moisture, and locally influential weather patterns. Winter 2008-2009 is once again receiving high amounts of precipitation. Beetle populations may remain high in 2009.

Others:

Pine engraver beetle (IPS) populations, and associated tree mortality in ponderosa pine stands in the Region remained essentially the same in 2008 as recorded in 2007—except on the Helena NF. There, just slightly fewer than 10,000 acres of IPS-caused mortality were recorded. Elsewhere in northern Idaho and Montana, populations and associated mortality was at not much higher levels than recorded in the past few years. Only about 3,000 acres of beetle-caused faders were recorded in the remainder of the Region. About 1,600 acres had been recorded in 2007. The Kaniksu NF recorded the next highest level of mortality, but it was fewer than 700 acres.

MPB populations are so extreme on the Helena NF (37,000 acres in ponderosa pine stands) that it is likely there were many stands infested by both beetles, or many small-diameter trees that from the air appear to be the size usually attacked by IPS the aerial observer made that assumption. Under the best of conditions it is difficult to distinguish trees killed by IPS from those affected by MPB. Likely, many trees were killed by both, either singly or in combination. We believe, throughout the Region, IPS populations have remained fairly static within the past couple of years. The anomaly observed on the Helena NF is very likely attributed to extreme MPB populations. An estimated 46,000 ponderosa pines were recorded on those 13,000 infested acres last year.

Western pine beetle (WPB)-caused mortality once again increased in 2008, likely the result of more acres in northern Idaho having been surveyed. Beetle-killed trees were recorded on slightly fewer than 15,000 acres—up from just over 2,000 acres in 2007. All major increases in infested area were recorded in northern Idaho. The Nez Perce NF reported nearly 5,000 acres, the Nez Perce IR just over 3,200 acres and the Clearwater NF and Coeur d'Alene NFs recorded 3,400 and 1,600 acres respectively. Only the Lolo NF reported more than 100 acres infested by WPB in western Montana. On the 14,960 infested acres reported in 2008, beetle-caused mortality was light and scattered, totaling only 15,700 trees—barely one tree per acre. Populations in 2009 will be almost entirely dependent on weather between now and beetle flight—and whether those conditions most favor the beetles or their hosts.

Spruce beetle (ESB) populations remained at endemic levels throughout both northern Idaho, Montana, and in Yellowstone NP—noted as a 300-acre decrease from the small amount recorded in 2007. The Flathead NF tallied the most infested acres in the Region; but that was only 24 total acres. The large outbreak in the Park, mapped at 8,700 acres in 2003 has totally subsided. Total infested area, Region-wide was only about 60 acres in 2008, on which an average one tree per acre had been killed.

Acres of Host Type Infested by Bark Beetles[1], 2006-2008
(x 1,000)

	North Idaho[2]			Montana[2]			Region-Wide		
Host/Beetle	**2006**	**2007**	**2008**	**2006**	**2007**	**2008**	**2006**	**2007**	**2008**
DF/DFB[3]	2.2	1.6	12.1	60.6	22.3	21.6	62.8	23.9	33.7
ES/ESB	0	0	0	0.1	0.4	0.1	0.1	0.4	0.1
GF/FE	12.7	11.9	217.6	2.4	1.7	0.4	15.2	13.6	218.0
PP&LPP/IPS	0.2	0.4	1.9	1.3	1.2	11.0	1.5	1.6	12.9
PINE[4]/MPB	68.2	84.7	557.8	813.1	807.2	1,821.1	881.2	891.9	2,378.9
SAF/WBBB	28.1	4.1	13.4	130.4	115.2	53.2	158.5	119.3	66.6
PP/WPB	0.5	1.6	14.8	0.5	0.4	0.2	1.0	2.0	15.0

[1] Estimates are from annual ADS. Bark beetles were assumed to have been the primary mortality-causing agent. Approximately 90% of the forested areas in the Region were surveyed in 2008.

[2] Figures for ID include that part of the IPNF in Washington; figures for MT include Yellowstone NP and South Dakota.

[3] See below for beetle and host abbreviations used throughout report.

[4] All MPB hosts: LPP, PP, WWP, WBP/LP (In 2007, infested acres by host were: 2,093,367; 54,569; 1,732; 229,267 respectively.)

The following abbreviations, for bark beetles and hosts, are used throughout this report:

Beetles: DFB: Douglas-fir beetle, *Dendroctonus pseudotsugae* Hopkins
MPB: Mountain pine beetle, *D. ponderosae* Hopkins
ESB: Spruce beetle, *D. rufipennis* (Kirby)
WPB: Western pine beetle, *D. brevicomis* LeConte
RTB: Red turpentine beetle, *D. valens* LeConte
IPS: Pine engraver, *Ips pini* (Say)
FE: Fir engraver, *Scolytus ventralis* LeConte
WBBB: Western balsam bark beetle, *Dryocoetes confusus* Swaine

Hosts: LPP: Lodgepole pine
PP: Ponderosa pine
WBP: Whitebark pine
WWP: Western white pine
LP: Limber pine
DF: Douglas-fir
GF: Grand fir
SAF: Subalpine fir
ES: Engelmann spruce

Reporting Area (RA) summaries follow. For each, bark beetle effects on their respective hosts are noted. To the extent possible, we have indicated areas affected, an estimate of impacts, and beetle population trends. Though reporting areas are typically designated by names of National Forests, Indian Reservations, or National Parks; there may be within those reporting areas, lands of various ownerships—federal, state and private.

BARK BEETLE CONDITIONS IN MONTANA

Beaverhead Reporting Area

Although not all infested areas were flown in 2007, total ADS estimates for the Beaverhead RA, on lands of all ownerships, showed nearly at 4,200 acres infested by DFB; 105,900 acres infested by MPB (all hosts); and just over 21,800 acres infested by WBBB. Approximately 396,000 trees were killed by bark beetles throughout the area in 2006, recorded as faders in 2007. In addition, nearly 200,000 acres showed some level of WSBW defoliation.

In 2008, comparable figures for the portions of the RA flown were: A more than three-fold increase in MPB-infested area—247,500 acres in LPP stands; and 74,500 acres of 5-needle pines. More than 1.2 million MPB hosts were killed. WBBB activity was recorded on only 464 acres, on which 3,650 SAF were killed. WSBW once again defoliated more than 124, 200 acres, and dependent upon weather over the next few years; many of those damaged trees could be killed by DFB.

FINDIT SUMMARIES, SELECTED STANDS—2008
(All data entries in Trees per Acre)
MPB in LPP

Forest/ Stand	Green LPP >5"	2008 Attacks	2007 Attacks	Older Dead	% Dead to Date	Pred. 10 Yr. Mort.
Beaverhead Big Hole B.	**284**	**32**	**2**	**0**	**10**	**228**
Beaverhead May Creek	**292**	**3**	**5**	**0**	**2**	**239**
Beaverhead Trail Creek	**349**	**0**	**0**	**3**	**1**	**264**
Beaverhead July 4 CG	**284**	**14**	**11**	**13**	**11**	**207**

Dillon RD:

Very large groups of MPB-killed LPP were recorded in the Beaverhead Mountains southwest of Dillon. In that same area, at higher elevations, WBP stands have been notably impacted by MPB as well. In many DF stands on the District, WSBW defoliation was high, although DFB populations were not noted significantly.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	--	--	--	--	--	--
Trees 07	--	--	--	--	--	--	--
Acres 08	**78,116**	**14**	**90**	**0**	**0**	**0**	**0**
Trees 08	**339,945**	**86**	**769**	**0**	**0**	**0**	**0**

Wise River RD:

Very large groups of LPP, killed by MPB were mapped in the Pioneer Mountains from just south of Anaconda, south nearly to Dillon. It appeared that most LPP stands in that area have been affected to some extent. In high-elevation WBP stands, MPB-caused mortality was also widely evident. Too, WSBW populations were high on the District and DFB outbreaks could ensue.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**13,827**	**432**	**327**	**0**	**0**	**0**	**0**
Trees 07	**36,635**	**986**	**1,162**	**0**	**0**	**0**	**0**
Acres 08	**73,793**	**24**	**34**	**0**	**0**	**0**	**0**
Trees 08	**306,907**	**192**	**546**	**0**	**0**	**0**	**0**

Wisdom RD:

MPB populations were just starting to build in LPP stands throughout the Big Hole. A few large groups of MPB-killed LPP were noted in the southern Beaverhead Mountains, south of Jackson. A few groups of MPB-killed WBP were mapped in the Bitterroot Mountains, west of Jackson and Wisdom. Ground evaluations showed a few areas with significant amounts of MPB-killed LPP in 2008. Those will appear as faders in 2009.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**114**	**641**	**222**	**0**	**0**	**0**	**0**
Trees 07	**357**	**1,394**	**1,004**	**0**	**0**	**0**	**0**
Acres 08	**1,022**	**78**	**176**	**0**	**0**	**0**	**0**
Trees 08	**1,773**	**408**	**1,071**	**0**	**0**	**0**	**0**

Madison RD:

Once again, large groups of MPB-infested LPP were found throughout LPP stands on the District. Most severely impacted stands were mapped in the Tobacco Root Mountains, the Gravelly Range, the Snowcrest Range, and into the Madison Range. Throughout those affected areas, where WBP stands were found, MPB-caused mortality was evident.

WBP stands, impacted by MPB were also noted on BLM-administered lands in the Centennial Mountains, south of Ennis. Many DF stands have experienced high amounts of WSBW-caused defoliation. DFB activity remained low, however; as did mortality attributed to WBBB.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**42,979**	**1,103**	**5,561**	**0**	**0**	**0**	**0**
Trees 07	**134,974**	**3,255**	**12,776**	**0**	**0**	**0**	**0**
Acres 08	**65,189**	**14**	**94**	**0**	**0**	**0**	**0**
Trees 08	**268,388**	**58**	**497**	**0**	**0**	**0**	**0**

Sheridan RD:

Large groups of MPB-killed LPP were mapped throughout the portion of the Snowcrest Mountain Range found on the District.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**33,478**	**902**	**11,518**	**0**	**0**	**0**	**0**
Trees 07	**100,809**	**2,294**	**35,966**	**0**	**0**	**0**	**0**
Acres 08	**50,340**	**98**	**63**	**0**	**0**	**0**	**0**
Trees 08	**182,682**	**128**	**670**	**0**	**0**	**0**	**0**

Bitterroot Reporting Area

Bitterroot RA totals for 2007 showed 1,800 acres infested by DFB, on which slightly more than 5,400 DF were killed. Slightly less than 2,500 acres LPP; 180 acres WBP; and about 380 acres PP contained varying amounts of MPB-caused mortality. About 4,000 MPB hosts were killed. Just over 9,500 acres of SAF stands were infested by WBBB, on which 15,800 SAF were killed.

In 2008, MPB activity in LPP was the most often-encountered bark beetle-caused mortality on the Forest. Slightly more than 45,800 LPP were killed on 8,100 acres. MPB also killed about 3,300 5-needle pines on 1,400 acres; and 300 PP on 360 acres. WBBB killed nearly 11,000 SAF on 2,840 acres; and DFB-caused mortality was recorded on only 675 acres—where 2,000 DF had been killed. Other bark beetle-caused mortality was recorded at very low levels.

Stevensville RD:

Small, very widely scattered groups DFB and MPB/LPP were reported in the Sapphire Mountains east of Stevensville. Some WBBB-caused mortality was noted at higher elevations. No groups exceeded more than about 50 trees. A few MPB-killed WBP were mapped in a few high-elevation stands—several of the largest groups were mapped above Skalkaho Basin. Small and scattered groups of DF-killed DF were noted east of Stevensville, as far south as Hamilton.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	--	--	--	--	--	--
Trees 07	--	--	--	--	--	--	--
Acres 08	**1,979**	**53**	**339**	**0**	**3**	**0**	**2**
Trees 08	**4,471**	**392**	**1,158**	**0**	**3**	**0**	**6**

Darby RD:

Only a small portion of the District was flown in 2008. Most reported bark beetle activity was reported east of Hamilton.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**282**	**98**	**881**	**0**	**0**	**0**	**0**
Trees 07	**595**	**187**	**786**	**0**	**0**	**0**	**0**
Acres 08	**479**	**48**	**43**	**0**	**4**	**0**	**0**
Trees 08	**992**	**160**	**186**	**0**	**4**	**0**	**0**

Sula RD:

Widely scattered small groups of DFB-killed DF and SAF killed by WBBB were noted throughout the District. Minor amounts of MPB-killed LPP were also noted.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**12**	**413**	**256**	**0**	**0**	**0**	**0**
Trees 07	**58**	**1,117**	**549**	**0**	**0**	**0**	**0**
Acres 08	**360**	**123**	**637**	**0**	**8**	**0**	**0**
Trees 08	**1,009**	**146**	**1,771**	**0**	**8**	**0**	**0**

West Fork RD:

Throughout the eastern portion of the District, small groups of LPP killed by MPB, DFB-affected DF, and WBBB-killed SAF were mapped. Most were small and widely scattered. To the west, larger groups of LPP, killed by MPB were noted near the Idaho/Montana border.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**2,729**	**1,317**	**8,410**	**2**	**10**	**0**	**0**
Trees 07	**3,064**	**4,100**	**14,447**	**1**	**5**	**0**	**0**
Acres 08	**6,982**	**418**	**1,819**	**0**	**4**	**0**	**2**
Trees 08	**42,821**	**1,101**	**7,877**	**0**	**4**	**0**	**2**

Custer Reporting Area

For the portion of the Custer NF flown in 2007, we recorded 4,300 DF killed on 1,100 acres; MBP had infested 1,400 acres of LPP, 530 acres PP, and 3,350 acres WBP—on which a total 13,800 trees had been killed (about 66% were WBP); and WBBB killed 17,000 SAF on 5,500 acres.

In 2008, 31,600 LPP were killed by MPB on an about 3,300 acres. MPB killed another 2,300 WBP on 1,100 acres and 1,100 PP on 1,000 acres. More than 15,000 SAF were reportedly killed by WBBB on 2,500 acres; and 660 IPS-killed PP were reported on 430 acres. DFB activity was reduced to 85 acres on which about 160 DF were affected. Pine tussock moth defoliation was reported on almost 2,800 acres and may have been associated with bark beetle-caused mortality in PP stands.

Beartooth RD:

MPB activity in high-elevation 5-needle pines (mostly WBP) was noted in a widely scattered pattern west of Red Lodge. In that same general area, several small groups of MPB-affected LPP and SAF killed by WBBB were also recorded. To the north, on private land in the vicinity of Columbus, several groups of MPB-killed PP were mapped. Some were of a few hundred acres in size and may be associated with defoliation caused by pine tussock moths.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**4,509**	**949**	**5,420**	**0**	**0**	**0**	**0**
Trees 07	**12,719**	**3,758**	**16,906**	**0**	**0**	**0**	**0**
Acres 08	**4,398**	**68**	**2,449**	**0**	**0**	**0**	**0**
Trees 08	**32,405**	**138**	**15,060**	**0**	**0**	**0**	**0**

Sioux RD:

Small and very widely scattered groups of PP, killed by both MPB and IPS, were mapped in the Chalk Buttes, Ekalaka Hills and on forested land southeast of Ekalaka, near the South Dakota border. To the east, into South Dakota, small groups of beetle-killed PP were numerous in North and South Cave Hills, Short Pine Hills, and Slim Buttes.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**61**	**0**	**0**	**0**	**0**	**0**	**0**
Trees 07	**93**	**0**	**0**	**0**	**0**	**0**	**0**
Acres 08	**269**	**0**	**20**	**0**	**0**	**0**	**0**
Trees 08	**260**	**0**	**30**	**0**	**0**	**0**	**0**

Ashland RD:

Small and very scattered groups of MPB- and IPS-killed PP were noted northeast and east of Ashland. Most groups contained fewer than 10 trees each. It is likely some trees were affected by both groups of bark beetles.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**438**	**0**	**0**	**0**	**0**	**4**	**0**
Trees 07	**398**	**0**	**0**	**0**	**0**	**12**	**0**
Acres 08	**202**	**0**	**0**	**0**	**0**	**153**	**0**
Trees 08	**193**	**0**	**0**	**0**	**0**	**206**	**0**

Deerlodge Reporting Area

For the Deerlodge RA, about half of which was flown in 2007, recorded MPB-infested LPP stands decreased somewhat to 177,200 acres, on which nearly 892,000 LPP were killed. MPB also killed a reported 4,200 WBP on 3,100 acres. DFB infested but 107 acres and WBBB was recorded on 120 acres.

Comparable figures for 2008 showed: More than 4.3 million LPP killed on 538,000 acres; 94,500 5-needle pines on 24,200 acres; and about 2,800 PP on another 1,600 acres. WBBB was attributed with killing nearly 20,000 SAF on 8,400 acres; and approximately 1,200 DF were killed by DFB on just over 400 acres. Other beetle-caused mortality was light. WSBW defoliated mostly DF on 22,100 acres. That may account for some of the increase in DFB activity.

FINDIT SUMMARIES, SELECTED STANDS—2008
(All data entries in Trees per Acre)
MPB in LPP

Forest/ Stand	Green LPP >5"	2008 Attacks	2007 Attacks	Older Dead	% Dead to Date	Pred. 10 Yr. Mort.
Deerlodge Elk Park	188	122	137	31	58	105
Deerlodge Bvr. Dam	82	3	58	46	58	3
Deerlodge Mor. Gulch	28	46	173	4	87	5
Deerlodge Silv. Bow-E	248	18	20	0	13	202
Deerlodge Silv. Sluice	333	124	0	0	26	255
Deerlodge Trap.Youse	444	41	0	0	8	478

Butte RD:

Extremely large groups of MPB-killed LPP—some totaling an average 60 dead trees per acre—were mapped southeast of Anaconda, and from there south nearly to Fleecer Mountain.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres07	22,593	0	0	0	0	0	0
Trees 07	116,886	0	0	0	0	0	0
Acres 08	124,551	6	0	0	0	0	0
Trees 08	1,238,379	17	0	0	0	0	0

Jefferson RD:

Very large groups of MPB-impacted LPP cover most LPP stands on the District. Although intensity of outbreaks is declining because so many susceptible trees have been killed within the past few years; most of the LPP forests east of Butte, from Boulder south into the northern Tobacco Root Mountains, have been affected to an extensive degree. In many areas, few LPP greater than 6 inches in diameter are alive.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres07	**153,502**	**99**	**120**	**0**	**0**	**0**	**0**
Trees 07	**758,581**	**367**	**341**	**0**	**0**	**0**	**0**
Acres 08	**280,590**	**48**	**0**	**0**	**0**	**0**	**0**
Trees 08	**2,051,540**	**194**	**0**	**0**	**0**	**0**	**0**

Deer Lodge RD:

Very large groups of MPB-killed LPP were noted east of Boulder. To the west, numerous large groups of LPP, killed by MPB, were mapped west of Anaconda and Deer Lodge, very broadly found throughout the Pintler and Flint Creek Mountain ranges. Some of the more intensive infestations found in the Region are located on this District.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**37**	**0**	**0**	**0**	**0**	**0**	**0**
Trees 07	**71**	**0**	**0**	**0**	**0**	**0**	**0**
Acres 08	**104,961**	**0**	**11**	**0**	**0**	**0**	**0**
Trees 08	**690,272**	**0**	**66**	**0**	**0**	**0**	**0**

Pintler RD:

Many large groups MPB-killed LPP found near Georgetown Lake, with smaller groups of faders mapped in a widely scattered pattern elsewhere. A few larger groups of MPB-infested LPP were also found north of Philipsburg, within the upper Willow Creek drainage. A few scattered groups of WBBB-killed SAF were found at higher elevations.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Trees 07	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Acres 08	**12,353**	**264**	**8,388**	**0**	**2**	**2**	**2**
Trees 08	**13,701**	**799**	**19,761**	**0**	**2**	**10**	**2**

Flathead Reporting Area

Throughout the Flathead RA in 2007, and on lands of all ownerships, nearly 45,000 acres have been infested by MPB; 1,600 acres by FE; 5,400 acres by DFB; and 7,000 acres by WBBB. Forest-wide, slightly more than 97,400 bark beetle-killed trees were recorded.

In 2008, three bark beetles accounted for most of the beetle-caused mortality reported: Slightly more than 55,500 LPP were killed by MPB on almost 22,000 acres; WBBB killed 26,400 SAF on 16,400 acres; and 12,800 DFB-killed DF were mapped on 7,900 acres. Other bark beetle activity was light—recorded at endemic levels.

Swan Lake RD:

Several large groups of MPB-killed LPP were mapped near the southern end of the District, near the Flathead/Lolo NF divide. Other scattered groups, some relatively large, but mostly smaller, were found north of there. Fewer, and generally smaller groups of LPP killed by MPB, were noted to the west, generally in the vicinity of Lindbergh Lake. MPB-caused mortality was widely scattered throughout LPP stands in the Mission Mountains. Lesser amounts of DFB- and WBBB-caused mortality were found in their respective hosts throughout the District. On the Island Unit, to the west, very widely scattered and small groups of LPP, DF, and SAF were mapped that had been killed by MPB, DFB, and WBBB, respectively.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**22,677**	**1,809**	**2,572**	**358**	**0**	**0**	**0**
Trees 07	**37,579**	**1,851**	**9,366**	**606**	**0**	**0**	**0**
Acres 08	**15,232**	**1,894**	**2,724**	**34**	**0**	**0**	**0**
Trees 08	**47,157**	**3,896**	**7,325**	**63**	**0**	**0**	**0**

Spotted Bear RD:

Smaller groups of MPB-killed LPP, than recorded in past years, were mapped in stands surrounding Spotted Bear. Infestations there have declined within recent years. Scattered groups of DF, killed by DFB, some larger than others, were noted near Spotted Bear Lake. To the east, in LPP stands within Spotted Bear River, groups of MPB-killed trees were seen—some much larger than others. To the north, along both sides of Hungry Horse Reservoir, were located small and scattered groups of MPB-killed LPP, DFB-killed DF, and SAF killed by WBBB.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**10,678**	**1,072**	**412**	**179**	**0**	**3**	**2**
Trees 07	**12,679**	**2,186**	**951**	**197**	**0**	**16**	**3**
Acres 08	**5,395**	**1,379**	**350**	**2**	**0**	**0**	**0**
Trees 08	**5,889**	**1,991**	**875**	**2**	**0**	**0**	**0**

Hungry Horse/Glacier View RD:

Only the western side of Hungry Horse Reservoir was surveyed. There, minor amounts of beetle-killed trees were noted in a widely scattered pattern. WBBB, MPB, and DFB had killed small amounts of their respective hosts.

On the former Glacier View RD, some very large groups of WBBB-killed SAF were noted in several tributaries of North Fork Flathead River. Similar amounts of SAF, killed by WBBB, were also noted on Stillwater State Forest, throughout the Whitefish Range. Minor amounts of DFB, FE, and MPB (in LPP) activity were also noted.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**9,453**	**1,854**	**2,003**	**85**	**0**	**0**	**8**
Trees 07	**16,320**	**3,162**	**3,961**	**179**	**0**	**0**	**4**
Acres 08	**395**	**3,601**	**10,444**	**43**	**0**	**0**	**0**
Trees 08	**657**	**4,607**	**14,431**	**86**	**0**	**0**	**0**

Tally Lake RD:

Small and very scattered groups of WBBB-killed SAF, and minor amounts of DFB-killed DF were found in stands surrounding Tally Lake. More widely scattered fader groups caused by those beetles were noted elsewhere; however, no large groups were recorded anywhere.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**92**	**504**	**882**	**48**	**0**	**2**	**2**
Trees 07	**274**	**1,280**	**2,092**	**90**	**0**	**6**	**1**
Acres 08	**52**	**702**	**2,163**	**36**	**0**	**0**	**12**
Trees 08	**129**	**1,582**	**2,657**	**46**	**0**	**0**	**10**

Gallatin Reporting Area

For the entire Gallatin RA, in 2007, about 2,060 acres of DFB-infested DF stands were observed on which about 9,800 DF were killed. Another 30,300 acres of MPB-infested LPP were mapped. More than 52,900 acres of MPB-killed WBP was noted (almost 307,000 WBP were killed); and about 33,400 acres were mapped on which approximately 99,000 WBBB-killed SAF were killed. WSBW activity was recorded on only 76,000, but much of the infested area was not surveyed.

In 2008, again with not all the RA flown, we recorded: nearly 100,000 acres of MPB-infested LPP, on which 452,000 trees were killed; 83,000 acres of 5-needle pines—

289,000 beetle-killed trees; 14,000 acres on which 55,000 WBBB-killed SAF were reported; and about 3,500 DF killed by DFB on 720 acres. WSBW activity extended to nearly 112,000 acres and may be associated with increasing DFB activity.

FINDIT SUMMARIES, SELECTED STANDS—2008
(All data entries in Trees per Acre)
MPB in LPP

Forest/ Stand	Green LPP >5"	2008 Attacks	2007 Attacks	Older Dead	% Dead to Date	Pred. 10 Yr. Mort.
Gallatin Fl. Pass Rd.	125	104	31	0	52	62
Gallatin Flat. Pass	106	72	22	1	45	35

Big Timber RD:

Widely scattered small groups of DFB-killed DF, MPB-killed LPP and WBP were found in the eastern portions of the Crazy Mountains. Large groups of WBP, killed by MPB, were mapped in the upper Boulder River drainage. Lower portion of the drainage was not surveyed.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	2,984	396	1,333	0	0	0	0
Trees 07	8,391	2,165	4,367	0	0	0	0
Acres 08	5,956	42	99	0	0	0	0
Trees 08	23,930	146	474	0	0	0	0

Livingston RD:

Large groups of MPB-killed LPP and WBP were noted in the Crazy Mountains. In the northern end of the Absaroka Range, small groups of MPB-killed LPP were recorded. To the west, in the Gallatin Range, large groups of MPB-killed LPP were mapped west of Livingston. Southern portion of the District was not surveyed.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	18,957	380	5,257	0	0	0	0
Trees 07	70,666	1,642	18,422	0	0	0	0
Acres 08	47,142	253	1,854	0	0	0	0
Trees 08	183,651	1,424	4,849	0	0	0	0

Gardiner RD:

Very large groups of LPP, killed by MPB were mapped just north of Yellowstone NP boundary, in the Gallatin Mountains on the District's western edge. A few large groups WBP, also killed by MPB were noted in that general area, northwest of Gardiner. In the Gallatin Range, MPB-caused mortality extends northward towards Bozeman—in WBP stands at higher elevations and LPP at lower ones.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**9,473**	**171**	**4,042**	**0**	**0**	**0**	**0**
Trees 07	**75,181**	**910**	**10,429**	**0**	**0**	**0**	**0**
Acres 08	**12,668**	**25**	**346**	**0**	**0**	**0**	**0**
Trees 08	**42,310**	**223**	**850**	**0**	**0**	**0**	**0**

Bozeman RD:

MPB beetle populations are building rapidly in LPP stands throughout the Bridger Mountains. FINDIT plots established near Flathead Pass showed an average of more than 50% of the trees in surveyed stands have been killed within the past 2 years—and we found about 3 times as many trees attacked in 2008 as had been in 2007. Minor amounts of DFB-killed DF were noted near Battle Ridge Campground, and some WSBW-defoliated trees near there have been infested by DFB. MPB-killed WBP was mapped northwest of Bozeman, in the Horseshoe Hills. South of Bozeman, many large groups of MPB-killed LPP were mapped in the northern portion of the Gallatin Range. There, surveyors also noted many large groups of MPB-killed WBP. Fewer and smaller groups of SAF had been killed by WBBB. In the northern portion of the Madison Range, many large groups of MPB-infested LPP were observed. South of there, stands within Lee Metcalf Wilderness were not surveyed.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**21,762**	**221**	**18,090**	**0**	**0**	**0**	**0**
Trees 07	**65,974**	**1,276**	**55,481**	**0**	**0**	**0**	**0**
Acres 08	**73,882**	**141**	**10,673**	**0**	**0**	**0**	**0**
Trees 08	**317,080**	**583**	**45,832**	**0**	**0**	**0**	**0**

Hebgen Lake RD:

Most of the southern part of District was not surveyed in 2008. To the north, many large groups MPB-killed LPP and WBP were mapped throughout the Madison Range, from Hebgen Lake, north towards Big Sky (Bozeman RD). Smaller groups of WBP, killed by MPB were mapped south of Quake Lake, and a few groups of LPP faders were noted south of West Yellowstone.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**25,840**	**752**	**4,374**	**0**	**0**	**0**	**0**
Trees 07	**168,445**	**3,362**	**9,790**	**0**	**0**	**0**	**0**
Acres 08	**32,452**	**26**	**1,034**	**0**	**0**	**0**	**0**
Trees 08	**96,406**	**14**	**2,710**	**0**	**0**	**0**	**0**

Helena Reporting Area

Throughout the Helena Reporting Area, and especially northwest of Helena, WSBW populations are increasing significantly—up to 128,000 acres in 2007. Defoliation, coupled with prolonged drought, could result in increased amounts of DFB activity within the next few years. Area-wide survey estimates for bark beetle-caused mortality for areas flown in 2007 totaled: DFB 420 acres; MPB 118,300 acres, of which 106,200 acres were LPP, 11,500 PP, and 530 WBP (almost 144,000 trees, of all species [92% LPP] were killed); and WBBB on less than 10 acres.

In 2008, those figures increased markedly, even though not all of the Forest was flown. MPB-infested stands nearly tripled—to almost 319,000 acres of beetle-killed LPP, 37,000 acres of PP, and another 4,200 acres of 5-needle pines. More than 9 million MPB hosts were killed—most were LPP. IPS were credited with killing 35,000 PP on almost 10,000 acres; however, much of that was very likely associated with MPB. DFB activity was recorded on 5,200 acres, on which about 3,900 DF were killed. Other bark beetle-caused mortality was very light. WSBW defoliated stands increased to almost 200,000 acres and DFB activity increased in some of those areas.

FINDIT SUMMARIES, SELECTED STANDS—2008
(All data entries in Trees per Acre)
MPB in LPP

Forest/ Stand	Green LPP >5"	2008 Attacks	2007 Attacks	Older Dead	% Dead to Date	Pred. 10 Yr. Mort.
Helena McD Pass	**115**	**211**	**15**	**9**	**67**	**39**
Helena Brook 47	**77**	**83**	**3**	**0**	**52**	**49**
Helena Brook 52	**90**	**112**	**22**	**3**	**54**	**65**
Helena Clancy 23	**318**	**70**	**0**	**0**	**16**	**218**
Helena Clancy 72	**93**	**100**	**4**	**0**	**50**	**39**

Helena Clancy 9	**262**	**137**	**15**	**0**	**35**	**174**
Helena Clancy 26	**186**	**248**	**0**	**0**	**45**	**173**
Helena Clancy 32	**305**	**81**	**17**	**8**	**23**	**150**
Helena Clancy 11	**518**	**31**	**0**	**0**	**5**	**290**
Helena Clancy 69	**119**	**24**	**5**	**0**	**19**	**50**
Helena Clancy 25	**50**	**91**	**54**	**0**	**68**	**32**

Townsend RD:

Only a small portion of the District, in the Big Belt Mountains northeast of Townsend, was surveyed in 2008. In that area, MPB impacting LPP stands was the most dominant bark beetle feature. WSBW populations were also quite high.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	**DFB**	**WBBB**	**FE**	**WPB**	**IPS**	**ESB**
Acres 07	**39**	**0**	**0**	**0**	**0**	**0**	**0**
Trees 07	**175**	**0**	**0**	**0**	**0**	**0**	**0**
Acres 08	**20,772**	**4,048**	**0**	**0**	**0**	**57**	**0**
Trees 08	**702,582**	**141**	**0**	**0**	**0**	**150**	**0**

Helena RD:

The Helena NF and Helena RD are experiencing some of the more intense MPB outbreaks we have experienced in the past 25 years in the Region. Very large groups of MPB-killed LPP were mapped northeast of Holter Lake, and also northeast of Hauser Lake—north and east of Helena. East of there, in the Smith River drainage, and also north of Helena, small and widely scattered groups of MPB-killed PP were noted. South of Helena, large groups of PP, killed by MPB and IPS, were very broadly found throughout PP stands. To the west and north of Helena, incredibly large groups of MPB-killed LPP were mapped. Heavily infested LPP stands were observed from Helena west nearly to Deer Lodge, and north to the Dearborn River. Infested stands also extend to the northwest towards Lincoln. FINDIT plots established near McDonald Pass showed stands with an average 15 trees per acre killed in 2007; 211 killed in 2008—a "build-up" ratio of 14:1. DF stands throughout the Helena area have been severely defoliated by WSBW. In some areas, especially in the vicinity of Flesher Pass, some trees have been killed by DFB.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres07	**81,991**	**4**	**2**	**0**	**0**	**0**	**0**
Trees 07	**98,263**	**5**	**31**	**0**	**0**	**0**	**0**
Acres 08	**181,441**	**170**	**2**	**0**	**0**	**1,867**	**0**
Trees 08	**5,506,713**	**301**	**20**	**0**	**0**	**4,931**	**0**

Lincoln RD:

Numerous groups of LPP, killed by MPB, were located northeast, north, and west of Lincoln. There were generally fewer beetle-killed groups to the south. Small and scattered groups of PP, killed by MPB, and DF, killed by DFB, were found south and southwest of Lincoln. Many DF stands throughout the District have been defoliated by WSBW and DFB populations may be infesting some of those stands.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres07	**14,189**	**273**	**0**	**0**	**0**	**0**	**0**
Trees 07	**14,244**	**727**	**0**	**0**	**0**	**0**	**0**
Acres 08	**79,165**	**490**	**14**	**0**	**0**	**37**	**2**
Trees 08	**1,718,949**	**2,036**	**48**	**0**	**0**	**120**	**2**

Kootenai Reporting Area

Total mortality attributed to bark beetles in the portion of the Kootenai RA surveyed in 2007 was: 800 DF killed by DFB on 725 acres; 45 GF killed by FE on 65 acres; 6,200 LPP killed by MPB on 3,400 acres; 40 WBP and 5 WWP on a combined 20 acres; and 12,000 SAF killed by WBBB on 6,700 acres.

While not all of the Forest was surveyed again in 2008, for the area flown we recorded: 6,900 acres of MPB-killed LPP (98,000 trees); 244 MPB-killed PP on 264 acres; almost 300 DFB-killed DF on 205 acres; and 1,200 SAF, killed by WBBB on 400 acres. Other bark beetle-caused mortality was minor. WSBW-defoliated stands were recorded on almost 35,000 acres. Bark beetle activity could occur in those affected stands.

Rexford RD:

The Rexford RD was not flown in 2008.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**2**	**79**	**0**	**0**	**0**	**0**	**0**
Trees 07	**1**	**56**	**0**	**0**	**0**	**0**	**0**
Acres 08	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Trees 08	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Fortine RD:

Only a very small portion of the District, in the extreme south, was surveyed in 2008.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**1,508**	**332**	**3,551**	**4**	**0**	**0**	**0**
Trees 07	**2,709**	**358**	**7,352**	**2**	**0**	**0**	**0**
Acres 08	**0**	**2**	**22**	**0**	**0**	**0**	**0**
Trees 08	**0**	**4**	**27**	**0**	**0**	**0**	**0**

Three Rivers RD:

Almost none of the District was flown in 2008.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**1,166**	**40**	**1,667**	**50**	**0**	**0**	**2**
Trees 07	**2,289**	**52**	**2,839**	**31**	**0**	**0**	**1**
Acres 08	**4**	**0**	**0**	**0**	**0**	**0**	**0**
Trees 08	**4**	**0**	**0**	**0**	**0**	**0**	**0**

Libby RD:

Very small and widely scattered groups of bark beetle-killed trees were noted south and generally east of Libby. Small groups of PP faders, killed by MPB, GF killed by FE and DF killed by DFB were scattered throughout the various forest types found there. A few larger groups of MPB-killed LPP were mapped in the Fisher River drainage. Numerous large groups of DF, defoliated by WSBW were mapped west of Highway 2, south of Libby and could result in increasing DFB activity. Increases in WBBB activity were also noted.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**28**	**40**	**4**	**2**	**0**	**0**	**2**
Trees 07	**34**	**85**	**9**	**1**	**0**	**0**	**1**
Acres 08	**1,111**	**171**	**371**	**16**	**0**	**8**	**10**
Trees 08	**9,949**	**220**	**1,215**	**21**	**0**	**20**	**12**

Cabinet RD:

Several large groups of MPB-killed LPP were found in the Vermillion River drainage. In that same area, many DF stands have been defoliated by WSBW and resurging DFB populations could be found in future years. Southern portion of the District was not surveyed.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Trees 07	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Acres 08	**5,209**	**20**	**0**	**0**	**2**	**0**	**0**
Trees 08	**87,830**	**48**	**0**	**0**	**2**	**0**	**0**

Lewis & Clark Reporting Area

Area-wide mortality attributed to bark beetles, for portions of Lewis & Clark RA surveyed in 2007, totaled almost 650 DF on 200 acres; and 43,600 MPB-killed trees on 19,300 acres—of all hosts, half of which was LPP, a third PP, the remainder WBP. Another 3,000 SAF were killed on 1,000 acres. Minor amounts of IPS-caused PP mortality were also noted. In addition, WSBW defoliated more than 36,700 acres.

In 2008, many of those infestation figures increased, but much more of the RA was flown. MPB killed 98,000 LPP on almost 43,000 acres; 35,400 WBP on 10,100 acres; and about 6,800 PP on nearly 4,200 acres. DFB had killed 2,000 DF on almost 950 acres and 3,700 SAF were killed by WBBB on 1,350 acres. WSBW activity increased to 57,300 acres and could lead to increased DFB activity.

Rocky Mountain RD:

Part of the District was surveyed in 2008, for the first time in several years. We have only a partial record of bark beetle activity on the District.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	--	--	--	--	--	--
Trees 07	--	--	--	--	--	--	--
Acres 08	32	0	0	0	0	0	0
Trees 08	222	0	0	0	0	0	0

Judith RD:

Numerous small groups of MPB-killed LPP were mapped in the Highwood Mountains east of Great Falls. The largest of those groups numbered about 100 trees. Smaller amounts of MPB-killed PP and DF killed by DFB were recorded in a more widely scattered pattern.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	148	22	26	0	0	0	0
Trees 07	284	72	72	0	0	0	0
Acres 08	7,859	78	1,158	0	0	26	0
Trees 08	22,431	178	3,190	0	0	32	0

Musselshell RD:

Small and scattered groups of PP, killed by MPB were noted in the Big Snowy Mountains south of Lewistown. To the north of Lewistown, numerous, but smaller groups of beetle-infested LPP and PP were mapped on BLM-administered lands in the Judith Mountains to the northeast. Fewer and more scattered beetle-caused mortality was noted in the North and South Moccasin Mountains, northwest of Lewistown. In the Castle Mountains, southeast of White Sulphur Springs, very large groups of LPP, killed by MPB, were mapped. Smaller groups of MPB-killed WBP were also found in that area. Throughout the District, DF stands have been impacted by WSBW. DFB outbreaks could develop in severely defoliated stands.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	9,530	31	165	0	0	0	0
Trees 07	18,922	118	507	0	0	0	0
Acres 08	22,516	613	7	0	0	0	0
Trees 08	61,092	1,373	59	0	0	0	0

Kings Hill RD:

Numerous, and occasionally large groups of MPB-killed groups of LPP, PP and WBP were found at various locations on the District. Large groups of beetle-infested LPP and WBP were mapped in the vicinity of Kings Hill. A few groups of SAF, killed by WBBB, were located in the Little Belt Mountains east of Neihart. Very large groups of DF, defoliated by WSBW were found throughout the southern part of the District. DFB outbreaks could follow.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**5,799**	**103**	**829**	**0**	**0**	**6**	**0**
Trees 07	**17,104**	**299**	**2,456**	**0**	**0**	**20**	**0**
Acres 08	**22,259**	**34**	**175**	**0**	**0**	**10**	**2**
Trees 08	**47,529**	**73**	**494**	**0**	**0**	**25**	**2**

Lolo Reporting Area

In 2007, MPB in LPP extended to more than 128,500 acres in the area flown, and nearly 360,000 trees were reported killed. MPB also killed slightly more than 7,000 PP on just over 3,100 acres. MPB-caused mortality in other hosts was nearly insignificant. For the area surveyed, DFB activity was also much reduced. Just over 3,000 DF were killed on almost 1,300 acres. WPB killed 160 PP on 270 acres. WBBB-caused mortality was noted on 460 acres and totaled 1,400 trees. FE activity has returned to nearly endemic levels. IPS killed an additional 500 PP on 1,200 acres.

In 2008, MPB-killed LPP were recorded on 130,500 acres and 482,800 dead trees were noted. Just over 3,600 MPB-killed PP were mapped on 1,300 acres; and WBBB killed 3,400 SAF on almost 2,300 acres. DFB killed about 6,800 DF on nearly 2,400 acres; WPB activity was noted on only 107 acres and FE on fewer than 50. IPS activity was also much reduced, found on only 45 acres, on which about 170 PP had been killed.

FINDIT SUMMARIES, SELECTED STANDS—2008
(All data entries in Trees per Acre)
MPB in LPP, except where noted (*). Those stands were PP.

Forest/ Stand	Green LPP >5"	2008 Attacks	2007 Attacks	Older Dead	% Dead to Date	Pred. 10 Yr. Mort.
Lolo Swamp N.	**237***	**12**	**7**	**4**	**9**	**NA (PP)**
Lolo Swamp S.	**236***	**31**	**1**	**3**	**12**	**NA (PP)**
Lolo Elk Mdw 1	**117**	**0**	**55**	**24**	**38**	**35**

Lolo Elk Mdw 2	**172**	**22**	**8**	**7**	**16**	**108**
Lolo Elk Mdw 3	**440**	**3**	**23**	**0**	**6**	**378**
Lolo Lee Creek	**120**	**9**	**40**	**28**	**29**	**39**

Missoula RD:

Many large groups of MPB-killed LPP were mapped south of Lolo Creek; others were noted west of Missoula—west to Petty Mountain. Northeast of Missoula, large groups of MPB-killed LPP were recorded throughout Rattlesnake Creek drainage. In the upper reaches of Rattlesnake Wilderness, noticeable amounts of WBBB-killed SAF were noted. In that same area, a few small groups DFB-affected DF were also mapped. Southeast of Missoula, very widely scattered groups of LPP and PP killed by MPB were observed. Smaller amounts of DFB-affected trees were found in that same area. Throughout Rock Creek drainage, small and widely scattered groups DFB-killed trees were noted. East of Rock Creek, in the John Long Mountains, observers mapped several larger groups of MPB-killed LPP. Smaller groups of dead PP were found in that same general area, but at generally lower elevations. Around Missoula, on State, private and USFS lands, MPB has killed a significant amount of PP. Some WPB and IPS activity was found in conjunction with MPB-killed trees.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**7,845**	**76**	**8**	**2**	**24**	**12**	**2**
Trees 07	**18,960**	**333**	**34**	**3**	**12**	**43**	**3**
Acres 08	**41,948**	**1,239**	**1,459**	**2**	**10**	**2**	**0**
Trees 08	**156,623**	**4,703**	**2,049**	**2**	**10**	**5**	**0**

Ninemile RD:

Many, but mostly small and widely scattered groups of LPP and PP, killed by MPB and WPB, were noted throughout Ninemile Creek drainage. Much of the area south of I-90 (Fish Creek and associated drainages) was not surveyed; however, areas north of Lolo Creek and west of Missoula were surveyed to some extent. In that part of the District, large groups of MPB-killed LPP were mapped. Several of them were in upper Fish Creek drainage. Smaller and more scattered groups of MPB-killed PP, and beetle-killed DF and SAF were also noted.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**27,070**	**303**	**115**	**6**	**44**	**18**	**2**
Trees 07	**75,597**	**932**	**511**	**3**	**22**	**89**	**3**

Acres 08	**4,209**	**23**	**60**	**0**	**12**	**0**	**0**
Trees 08	**21,912**	**47**	**134**	**0**	**12**	**0**	**0**

Plains/Thompson Falls RD:

Small, widely scattered groups of MPB-killed LPP were mapped south of the Clark Fork River, south of Plains. Larger groups were noted in Prospect Creek drainage west of Thompson Falls. Many scattered groups of MPB-killed trees were also noted in LPP stands north of Plains and Thompson Falls. In lower elevation stands on the District, some minor amounts of MPB-killed PP were mapped; and at higher elevations, SAF killed by WBBB were found.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	**DFB**	**WBBB**	**FE**	**WPB**	**IPS**	**ESB**
Acres 07	**45,581**	**543**	**51**	**4**	**121**	**327**	**4**
Trees 07	**164,959**	**1,116**	**153**	**4**	**75**	**718**	**7**
Acres 08	**31,568**	**10**	**36**	**1**	**30**	**12**	**0**
Trees 08	**152,043**	**34**	**175**	**1**	**42**	**50**	**0**

Seeley Lake RD:

Very large groups of MPB-killed LPP were mapped throughout the District. Largest groups were found near Rainy and Clearwater Lakes, north of Seeley Lake. Other, more scattered groups were noted to the east—from Ovando Mountain, east to Forest boundary. A few small and widely scattered groups of DF, killed by DFB, and WBBB-killed SAF were noted throughout the District; but they were insignificant when compared to MPB-caused damage.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	**DFB**	**WBBB**	**FE**	**WPB**	**IPS**	**ESB**
Acres 07	**18**	**--**	**--**	**--**	**--**	**--**	**--**
Trees 07	**91**	**--**	**--**	**--**	**--**	**--**	**--**
Acres 08	**27,009**	**734**	**659**	**43**	**0**	**0**	**0**
Trees 08	**50,863**	**1,525**	**868**	**206**	**0**	**0**	**0**

Superior RD:

Many widely scattered groups LPP, killed by MPB, were found south of I-90—from Superior west to Lookout Pass. Most heavily infested stands were noted in Dry Creek and west from Big Creek. North of I-90, surveyors mapped small and very scattered groups of MPB-killed PP.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**49,614**	**162**	**283**	**6**	**99**	**8**	**0**
Trees 07	**99,379**	**296**	**682**	**3**	**166**	**44**	**0**
Acres 08	**22,297**	**4**	**34**	**0**	**22**	**4**	**0**
Trees 08	**92,996**	**12**	**168**	**0**	**26**	**16**	**0**

Garnet Reporting Area (BLM)

Very large, and numerous groups of MPB-killed LPP were mapped throughout the RA. Largest and most intense groups were to the east—north and west of Avon. In the central part of the area, more heavily infested stands of LPP were mapped from I-90 on the south to Highway 200 on the north. Most heavily impacted stands were located north and east of Garnet. To the west, there were more widely scattered, small groups of beetle-killed trees. Those were typically MPB-killed PP, with minor amounts of DFB- and WBBB-caused mortality.

In 2007, for the area flown, only about 150 DF were reported killed on approximately 50 acres. MPB reportedly killed 14,200 LPP on 5,300 acres and 200 PP on 105 acres. IPS accounted for an additional 100 dead PP, on 35 acres; and about 350 WBBB-killed SAF were reported on 335 acres.

In 2008, with most of the area surveyed, those figures have increased significantly relative to MPB activity. More than 150,000 LPP were killed by MPB on almost 70,100 acres, and another 2,400 PP were killed on 2,000 acres. WBBB activity decrease, and DFB activity was up somewhat, as were the number of GF killed by FE. IPS activity declined.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**5,365**	**47**	**334**	**0**	**0**	**33**	**0**
Trees 07	**14,379**	**154**	**354**	**0**	**0**	**101**	**0**
Acres 08	**72,195**	**283**	**9**	**31**	**2**	**0**	**0**
Trees 08	**153,230**	**650**	**26**	**151**	**2**	**0**	**0**

Special Surveys—Miles City and Roundup

Special surveys were conducted on mostly private land, about 35 miles east of Miles City and 10 miles southeast of Roundup to monitor ongoing pine tussock moth outbreaks. In the Roundup area, the infested area has expanded to cover more than 6,800 acres. East of Miles City, the outbreak extends to just less than 1,000 acres. In conducting those surveys, bark beetle-killed trees were also observed.

South and east of Roundup, almost 500 acres of PP showed some level of MPB-caused mortality. Another 200 acres exhibited scattered PP mortality attributed to IPS. The infestations east of Miles City were less expansive—about 90 acres PP had scattered MPB-caused mortality and 35 acres of IPS-killed trees. In both areas, beetle-caused mortality, likely associated with defoliation and dry conditions, totaled a relatively light one tree per acre.

Indian Reservations

Blackfeet IR:

The Reservation was not flown in 2007, but most was surveyed in 2008. In 2004, the western portion was surveyed along with Glacier NP. In 2004, the last year for which we have good survey data, the most significant bark beetle-caused damage was several large groups of SAF, killed by WBBB, recorded near Cut Bank Ridge and in upper tributaries of North Fork Cut Bank Creek.

In 2008, relatively minor amounts of bark beetle activity were observed. Fewer than 700 total acres of MPB-killed LPP were noted—a total of 4,500 trees were killed in mostly small and scattered groups.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	--	--	--	--	--	--
Trees 07	--	--	--	--	--	--	--
Acres 08	**667**	**55**	**2**	**4**	**0**	**0**	**0**
Trees 08	**4,548**	**68**	**6**	**8**	**0**	**0**	**0**

Crow IR:

The Reservation was not flown in 2008. The following is a summary of conditions as reported in 2007. A very few, small groups of MPB-killed PP were mapped in Wolf Mountains, and southeast of Lodge Grass.

In Bighorn Mountains, just east of Bighorn River, several small groups of LPP, killed by MPB were mapped south of Fort Smith. At higher elevations, WBBB-caused mortality was prevalent in SAF stands south to the Montana/Wyoming border. To the east, observers mapped numerous small groups of DFB-killed DF.

In Pryor Mountains, numerous groups of beetle-killed trees were recorded, but most were small. DFB-killed DF was common, but no group was larger than 5 trees. Several small groups of MPB-killed LPP were found; and to the south, several groups of dead SAF each were mapped—that mortality was attributed to WBBB. Minor amounts of MPB-killed PP were also noted.

Throughout the Reservation in 2007, only 300 PP were reportedly killed by MPB on 165 acres. Last year, about 120 LP were killed by MPB on 30 acres in the Pryor Mountains, and another 1,120 LPP had been killed on 290 acres. In 2007, 350 acres were recorded on which 1,370 DFB-killed DF were observed. Mortality attributed to WBBB also increased in 2007 to 16,600 SAF on 4,740 acres.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**477**	**348**	**4,736**	**0**	**0**	**0**	**0**
Trees 07	**1,535**	**1,371**	**16,608**	**0**	**0**	**0**	**0**
Acres 08	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Trees 08	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Flathead IR:

LPP stands with noticeable amounts of MPB-killed trees were mapped along the western edge of the Reservation. Small groups of MPB-killed trees were scattered to the southwest, but beetle populations have declined considerably over the past couple of years. The eastern and southeastern portion of the Reservation, where MPB populations have been high, was not flown. In the northern and interior part of the reporting area, small and scattered groups of MPB-killed PP were noted west of Big Arm, and southward throughout the Salish Mountains.

In 2007, DFB activity increased slightly—up to 1,100 beetle-killed trees on 550 acres; MPB generally declined, although some new areas were infested—112,000 LPP were killed in 27,800 acres, about 1,500 PP on 1,040 acres and close to 20 WBP on just fewer than 20 acres. IPS activity was higher—almost 700 PP killed on 610 acres; and WBBB-killed SAF also increased—2,400 trees on 1,050 acres. WPB accounted for 90 dead PP on 125 acres, but almost no FE-caused mortality was noted.

In 2008, for the portion of the Reservation flown, MPB-killed LPP were reported on 2,800 acres and slightly more than 1,200 PP had been killed by MPB on fewer than 800 acres. DFB-killed DF were observed on only 51 acres, IPS-killed PP on 4 acres, and WBBB activity was noted on just under 100 acres. Other bark beetle activity was recorded at endemic levels.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**28,866**	**0**	**1,045**	**0**	**124**	**610**	**0**
Trees 07	**113,485**	**0**	**2,426**	**0**	**89**	**688**	**0**
Acres 08	**3,542**	**51**	**99**	**2**	**28**	**4**	**0**
Trees 08	**4,443**	**73**	**189**	**4**	**28**	**16**	**0**

Fort Belknap IR:

Most of the forested portion of the Reservation was flown, but only widely scattered bark beetle activity was reported. Only a few, small groups of MPB-killed PP were mapped, as were small amounts of IPS-killed PP. Lesser amounts of beetle-killed LPP were noted throughout that forest type. No DFB activity was reported in 2008.

In total, fewer than 800 MPB-killed trees were recorded on just over 1,500 acres; compared to 400 trees on 134 acres n 2007. IPS activity was reported on 65 acres in 2008, 19 acres in 2007.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**134**	**13**	**0**	**0**	**0**	**19**	**0**
Trees 07	**400**	**57**	**0**	**0**	**0**	**61**	**0**
Acres 08	**767**	**0**	**0**	**0**	**0**	**65**	**0**
Trees 08	**1,563**	**0**	**0**	**0**	**0**	**112**	**0**

Northern Cheyenne IR:

The Reservation was not surveyed in 2008. A summary of conditions, as recorded in 2007, follows. Little bark beetle-caused mortality was recorded. Several small groups of MPB-killed PP were mapped in a scattered pattern throughout the IR, but few were larger than 5 trees each. One large group, containing an estimated 100 beetle-killed trees, was noted southeast of Fisher Butte. In all, about 250 PP were recorded as having been killed by MPB on 310 acres.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**310**	**0**	**0**	**0**	**0**	**0**	**0**
Trees 07	**244**	**0**	**0**	**0**	**0**	**0**	**0**
Acres 08	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Trees 08	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Rocky Boy's IR:

Numerous groups of MPB-killed LPP were mapped throughout LPP stands on the Reservation. Minor amounts of MPB- and IPS-killed PP were also noted. Some of the larger groups of beetle-killed LPP were mapped near Centennial Mountain, Black Mountain, and along Twomile Ridge. A very minor amount of DFB-caused mortality was recorded.

In 2007, MPB-killed trees totaled 17,000 LPP and PP on about 2,000 acres. In 2008, MPB killed nearly 13,000 trees on just fewer than 2,800 acres. DFB had reportedly killed fewer than 60 DF on 18 acres. IPS-killed PP totaled 85 trees on 44 acres.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**2,011**	**2**	**0**	**0**	**0**	**0**	**0**
Trees 07	**17,523**	**25**	**0**	**0**	**0**	**0**	**0**
Acres 08	**2,727**	**18**	**0**	**0**	**0**	**44**	**0**
Trees 08	**12,934**	**56**	**0**	**0**	**0**	**85**	**0**

National Parks

Glacier NP:

Most of the Park was surveyed for the first time in several years. As with much of western Montana, MPB activity in LPP stands was the most prominent insect-related damage noted in 2008. Though small compared to past outbreaks, MPB-killed LPP was still significant in a few locations and has increased in many. Several large groups of faders were noted north of Kintla Lake, near Bowman Lake, along Logging Creek and northern shore of Logging Lake, and both to the north and south of McDonald Lake. To the south, a few large groups were mapped along Middle Fork Flathead River. Elsewhere, there were numerous small and widely scattered groups of MPB-killed LPP within the LPP type.

DFB activity generally declined, but DFB-killed DF was mapped as widely scattered small groups throughout the Park.

WBBB-caused damage was mapped in high-elevation SAF stands in the Livingston Range. Some noticeable amounts of WSBW activity could lead to increases in DFB populations and resultant damage.

In 2007, DFB-killed DF totaled almost 9,000 trees on 3,600 acres; 26,500 MPB-killed LPP were recorded on 10,000 acres; and almost 4,400 SAF were killed by WBBB on 1,600 acres. In 2008, those totals for MPB had increased to nearly 140,000 trees on 21,000 acres; DF activity declined to less than 4,000 beetle-killed trees, and WBBB activity was more intense on fewer acres. Other beetle-related mortality at endemic levels—bark beetles killed about 80 GF and less than 10 ES.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**10,060**	**3,604**	**1,580**	**2**	**0**	**0**	**4**
Trees 07	**26,546**	**8,814**	**4,372**	**11**	**0**	**0**	**6**

Acres 08	**20,978**	**2,146**	**3,624**	**64**	**0**	**0**	**4**
Trees 08	**138,355**	**3,950**	**8,005**	**79**	**0**	**0**	**6**

Yellowstone NP:

Small, scattered groups of MPB-killed LPP were mapped south of Shoshone Lake. Several small groups of LPP and WBP, killed by MPB, were noted near Mount Washburn. Very large groups MPB-killed WBP mapped in northern part of Park, especially along Buffalo Plateau. Relatively large groups of MPB-killed LPP were mapped in Park's northwest corner; and other large groups of beetle-killed WBP were observed north from Grayling Creek and west from Mammoth. WSBW-defoliated acres were widely recorded in the Park as well. That may influence future DFB activity.

To the east, large groups of MPB-killed WBP were mapped east of Yellowstone Lake—from there east towards Park boundary. At lower elevations, smaller and more scattered groups of beetle-killed LPP were observed. Large groups LPP and WBP, killed by MPB, were found throughout the Lamar River drainage. More generally, small and scattered groups of MPB-killed LPP and WBP were found throughout host type in the eastern half of the Park.

In 2007, most beetle-caused mortality had increased. DFB had killed 1,300 DF on 380 acres; and 540 ESB-killed ES were noted on 375 acres. But major increases in MPB activity were recorded in both LPP and WBP stands—48,700 LPP had been killed on 28,000 acres and 66,700 WBP on 37,000 acres. Another 32,000 SAF have been killed by WBBB on 22,000 acres. In addition, WSBW defoliation was reported on nearly 30,000 acres.

Now, in 2008, we have found MPB and WSBW activity on about the same number of infested acres, while DFB and WBBB were found on significantly fewer acres. MPB-killed WBP was found on nearly 30,000 acres and LPP had been killed by MPB on another 25,500 acres. DFB-affected trees were found on fewer than 200 acres and WBBB on only 850 acres. WSBW defoliation was recorded on nearly 39,000 acres once again, and could result in a resurgence of DFB populations in future years.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	**DFB**	**WBBB**	**FE**	**WPB**	**IPS**	**ESB**
Acres 07	**64,923**	**379**	**21,987**	**0**	**0**	**0**	**374**
Trees 07	**115,477**	**1,265**	**31,984**	**0**	**0**	**0**	**543**
Acres 08	**55,485**	**166**	**850**	**0**	**0**	**0**	**4**
Trees 08	**105,524**	**355**	**2,277**	**0**	**0**	**0**	**4**

BARK BEETLE-RELATED SPECIAL PROJECTS—MONTANA

Evaluating Efficacy of Verbenone and GLV on Rocky Boy's IR

The anti-aggregation pheromone for MPB, verbenone has shown promise in protecting individual trees and stands from beetle attacks in several of its hosts. In cooperation with personnel on Rocky Boy's IR, and Synergy Semichemicals, we evaluated the efficacy of verbenone (7.5-gram pouches) alone, and in combination with leaf alcohol (50:50 blend of Z-3-hexenol and cis-3-hexanol) (GLV), in preventing beetle attacks on LPP in several adjacent stands on Rocky Boy's IR. In May we selected 16 one-acre blocks in areas that had low to moderate levels of 2007 MPB-caused tree mortality, and in which management activities were scheduled within the next year or so. Treatments, installed in June, were one of four types: 20 verbenone pouches per acre; 30 verbenone pouches per acre; 20 verbenone pouches plus 20 GLV pouches per acre (on alternating grid points); and no treatments (controls).

In September, following beetle flight, treatments were evaluated. We conducted a 100% cruise of all trees greater than 5 inches d.b.h. in each block. All MPB host trees were recorded by d.b.h. and one of the following damage classes: 1) live (not attacked), 2) current MPB attack, 3) previous-year MPB kill, 4) older beetle-caused mortality, 5) current, unsuccessful attack (pitchout), 6) current MPB strip-attack, 7) older MPB strip-attack, 8) current secondary beetle attack, and 9) older secondary-beetle mortality. Only live non-host trees were recorded.

Preliminary data showed significantly different treatment effects in all treated plots, compared to untreated controls. The 30 verbenone pouch-per-acre treatment and the verbenone + GLV treatment were most effective in reducing beetle-caused mortality. Data is being analyzed and a final report is forthcoming.

For additional information, contact Nancy Sturdevant, MFO.

Bark Beetle Trapping on Wild Horse Island

In spring 2007, Amy Gannon (MT DNRC) was questioned about bark beetle threats in a forest health improvement project in second-growth PP stands on Wild Horse Island—a several thousand-acre island, within Flathead Lake, administered as a Montana State Park by Montana Fish, Wildlife and Parks. About half is forested, managed by FWP with assistance from Polson Field Office, MT DNRC. Funding for the project was provided by FHP, Missoula Field Office, and administered by DNRC.

A dozen or so private residences, there since before the island was a state park, are surrounded by second-growth PP. Those stands, regenerated after a fire 50-60 years ago, are no longer growing vigorously; and fire hazard has increased significantly within the past few years. In order to increase vigor of those stands, and reduce fire hazard; DNRC

proposed thinning 100-200 acres of the most densely stocked stands. Approximately 70 were thinned in 2007 and about that much again in 2008.

Due to the unique situation on the island, stands were hand-thinned and piled in spring 2007 and 2008 by fire crews from Salish-Kootenai Tribes, Flathead IR (CSKT); and DNRC. Piled material was to be burned in the fall of each year. Threats of IPS infesting piled slash and subsequently infesting leave trees was a concern; and typical ameliorating actions for IPS populations—lopping and scattering, spring burning, or chipping—were not options. We concluded threats could be reduced by using pheromone-baited funnel traps to attract flying IPS away from standing trees.

In early June 2007, after beetles had infested slash piles, we (crews from DNRC, CSKT and FHP) hung 80 funnel traps throughout the thinned area. Subsequent evaluations showed thousands of beetles collected in traps, and one beetle-infested tree. At present, it appears beetle trapping, to the benefit of leave trees, was successful. Thinning was resumed in 2008, and traps were once again installed. We anticipate the project continuing in 2009 with additional thinning and trapping.

This project, a multi-agency venture between FHP, DNRC, FWP, and CSKT; was designed to promote and foster more healthful forest conditions and reduce fire hazard. The project, as evidenced by number of beetles trapped and lack of beetle-killed trees, has been successful in meeting management objectives.

For additional information, contact Amy Gannon, DNRC; or Ken Gibson, MFO.

BARK BEETLE CONDITIONS IN IDAHO

Clearwater Reporting Area

A sizeable portion of the Clearwater RA was surveyed in 2007; however, much more was flown in 2008. While we have better continuity, from one year to the next, than we have had in several years; increases in infested areas for some beetles may be more a reflection of area surveyed than actual population increases.

In 2007, for the portion of RA flown, we observed the following: DFB killed 1,600 DF on 850 acres; FE-killed GF totaled 6,300 on 5,700 acres; MPB had killed 58,000 LPP on 31,400 acres; WBBB was at least partially responsible for death of 670 SAF on 250 acres; 500 WPB-killed PP were noted on 230 acres; and IPS killed another 500 PP on 75 acres. BWA- and blister rust-affected stands, on a combined 7,100 acres, may also have harbored bark beetle populations.

For 2008, the following data were obtained: More than 243,000 MPB-killed LPP were recorded on 137,900 acres; with only minor amounts of MPB-caused mortality in other hosts. FE-caused damage in GF stands increased in area, but not greatly in intensity—only 33,000 trees were killed on about 54,000 acres. WBBB-caused mortality was recorded on almost 1,600 acres—affecting 2,700 trees; however, BWA-caused damage was mapped on more than 34,000 acres, and there may have been some overlap between the two. DFB activity was mapped on just over 5,000 acres, and an estimated 7,700 DF were killed. WPB killed 3,200 PP on 3,450 acres. Other bark beetle-caused mortality was much less significant.

Pierce RD:

Widely scattered small groups of GF, killed by FE, were found throughout the reporting area. Lesser amounts of FE-, WPB-, and DFB-killed trees were noted north and east of Kamiah. Larger groups of FE-killed GF were located on State and private land west of Pierce. Data for Pierce RD were recorded with Lochsa RD.

Palouse RD:

Small and widely scattered groups of GF, killed by FE were mapped north and east of Moscow. Larger groups were found south and east of Potlatch, and smaller ones noted north of there and south of Bovil. Occasional small groups of PP, killed by WPB, were found between Harvard and Deary.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**73**	**12**	**2**	**4,172**	**165**	**42**	**0**
Trees 07	**253**	**12**	**4**	**4,355**	**339**	**124**	**0**
Acres 08	**934**	**313**	**0**	**31,214**	**2**	**75**	**0**
Trees 08	**659**	**1,014**	**0**	**17,596**	**5**	**600**	**0**

North Fork RD:

Many large groups of MPB-killed LPP were mapped throughout the reporting area. Largest groups were found south and west of Hoodoo Pass. Other groups, farther to the south, were not as large. Additional, very large groups MPB-caused mortality in LPP stands were mapped just west of Lolo Pass. Other faded trees, killed by FE, DFB, and MPB-killed PP were more widely scattered in small groups.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**28,278**	**227**	**111**	**1,213**	**6**	**0**	**2**
Trees 07	**54,335**	**324**	**305**	**1,336**	**8**	**0**	**1**
Acres 08	**103,013**	**923**	**120**	**12,546**	**39**	**0**	**0**
Trees 08	**210,624**	**1,736**	**220**	**7,209**	**106**	**0**	**0**

Lochsa RD:

Many large groups of MPB-killed LPP found throughout Lochsa River drainage. Heaviest concentrations were northwest of Lolo Pass and to the southwest, closer to Lowell. Other sizeable groups were mapped north of the Lochsa, to the District boundary.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**3,732**	**598**	**137**	**4**	**0**	**0**	**4**
Trees 07	**3,364**	**1,221**	**359**	**2**	**0**	**0**	**2**
Acres 08	**35,262**	**3,778**	**702**	**3,319**	**32**	**0**	**0**
Trees 08	**31,903**	**4,870**	**944**	**2,460**	**102**	**0**	**0**

Powell RD:

Scattered groups MPB-killed LPP were located north of Lochsa River and west of Lolo Pass—west to District boundary. Minor amounts of DFB-killed DF and FE-killed GF were occasionally noted. At higher elevations, minor amounts of WBBB-caused mortality were noted. Data for Powell RD were recorded with that for North Fork RD.

Idaho Panhandle Reporting Area

Coeur d'Alene NF (Coeur d'Alene River RD):

Bark beetle activity increased substantially in 2008, compared to 2007. Last year, MPB-killed LPP was recorded on 14,000 acres, with 37,000 trees being killed. In 2008, those figures increased to 96,000 LPP on 32,600 acres. MPB also killed an estimated 1,000 WWP on 1,700 acres in 2008. FE-caused mortality increased somewhat, from 3,500 trees on 2,500 acres in 2007 to 5,400 trees on 5,900 acres in 2008. DFB activity declined slightly in 2008, from 320 acres to just over 200. Other bark beetle-caused mortality was light and scattered; however, WSBW-defoliated acres were still high—more than 211,000 acres affected.

Many large groups LPP, killed by MPB, found from Kellogg east to Lookout Pass and north to the Coeur d'Alene River. In that general area, MPB has killed lesser amounts of WWP as well. Around the city of Coeur d'Alene, many small and widely scattered groups of FE-killed GF and WPB-killed PP were noted. Heavy amounts of WSBW activity on the District could result in a resurgence of DFB activity.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**11,110**	**199**	**249**	**1,525**	**162**	**0**	**8**
Trees 07	**28,895**	**376**	**580**	**1,718**	**163**	**0**	**4**
Acres 08	**28,242**	**133**	**186**	**4,735**	**953**	**0**	**0**
Trees 08	**72,929**	**359**	**63**	**3,275**	**437**	**0**	**0**

Kaniksu NF (Sandpoint RD):

MPB-caused mortality also increased on the Kaniksu NF (all three Districts) in 2008. In 2007, about 33,000 LPP; 1,900 WBP; and 60 PP were killed on a combined 11,000 acres. In 2008, comparable figures were: 59,000 LPP; 110 PP; 20 WWP, and 45 WBP on 12,500 acres. DFB-infested acres were up slightly, to 430 acres, and WBBB killed about 2,600 SAF on 2,000 acres. FE-caused mortality declined in 2008.

Widely scattered small groups of PP, killed by WPB and FE-killed GF were noted throughout the District. No major concentrations were seen. Most of that scattered mortality, along with minor amounts of DFB activity, was mapped south of Sandpoint. High amounts of WSBW-caused defoliation could trigger DFB outbreaks.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**10**	**11**	**74**	**113**	**73**	**3**	**0**
Trees 07	**20**	**9**	**162**	**142**	**35**	**16**	**0**

Acres 08	**34**	**41**	**0**	**41**	**63**	**0**	**0**
Trees 08	**76**	**102**	**0**	**68**	**171**	**0**	**0**

Kanisksu NF (Bonners Ferry RD):

Large groups of MPB-killed LPP were once again mapped in the Selkirk Mountains, from Trout Creek to the Canadian border. At a few higher elevations, WBBB-caused mortality in SAF stands was observed. A few smaller groups of MPB-affected LPP were observed east of Bonners Ferry—both north and south of Round Prairie.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	**DFB**	**WBBB**	**FE**	**WPB**	**IPS**	**ESB**
Acres 07	**10,619**	**18**	**2,538**	**34**	**0**	**0**	**0**
Trees 07	**34,708**	**35**	**2,374**	**24**	**0**	**0**	**0**
Acres 08	**12,175**	**15**	**1,549**	**160**	**15**	**0**	**0**
Trees 08	**58,269**	**32**	**1,918**	**97**	**22**	**0**	**0**

Kaniksu NF (Priest Lake RD):

Large groups WWP affected by blister rust were mapped east of Priest Lake—those may also be harboring MPB populations. Small and widely scattered groups of WPB-killed PP and FE-killed GF were noted throughout the District. At higher elevations west of the Idaho/Washington border, WBBB-affected SAF were noted.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	**DFB**	**WBBB**	**FE**	**WPB**	**IPS**	**ESB**
Acres 07	**0**	**0**	**0**	**36**	**16**	**0**	**0**
Trees 07	**0**	**0**	**0**	**25**	**17**	**0**	**0**
Acres 08	**133**	**276**	**187**	**191**	**67**	**0**	**7**
Trees 08	**200**	**341**	**110**	**147**	**58**	**0**	**6**

St. Joe NF (Avery/St. Maries/Red Ives RD):

Not all of the St. Joe NF was flown in 2007, but for that portion surveyed, we recorded 360 DF killed by DFB on 290 acres; 1,650 GF killed by FE on 1,120 acres; MPB-killed LPP totaled 49,800 trees on 27,400 acres; WPB-killed PP were noted on 80 acres and totaled 100 trees; and SAF killed by WBBB totaled 850 on 390 acres. Other bark beetle-related mortality was less significant; however, BWA activity was recorded on 5,000 acres, blister rust on 1,900 acres, and WSBW on an additional 17,300 acres. All could be associated with bark beetles now or in the near future.

In 2008, the following bark beetle-caused damages were noted: MPB killed 262,500 LPP on 93,000 acres; 16,350 GF were killed by FE on 25,000 acres; DFB was attributed with

killing 700 DF on 540 acres; and WBBB 170 SAF on 360 acres. Other beetle-related damages were minor. WSBW defoliated another 29,000 acres

Very many large groups LPP, killed by MPB were mapped throughout the Bitterroot Mountains from St. Joe Lake northwestward to Avery. Most groups were not intensely infested, but most LPP stands in the area appear to be affected to some extent. Large, beetle-killed groups of LPP extend westward from just north of Avery to a bit south of Wallace. Scattered groups of WWP affected by blister rust, and likely MPB; FE-killed GF and SAF affected by both BWA and WBBB, were found throughout the reporting area, but were fairly insignificant when compared to MPB-caused mortality. FE-caused mortality persists—lightly scattered throughout northern portion of St. Maries RD, with much larger groups found south of St. Maries, nearly to Clarkia.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**26,497**	**128**	**350**	**224**	**28**	**0**	**8**
Trees 07	**47,452**	**151**	**768**	**271**	**35**	**0**	**11**
Acres 08	**91,858**	**33**	**345**	**3,976**	**302**	**0**	**0**
Trees 08	**258,945**	**61**	**161**	**2,564**	**106**	**0**	**0**

Nez Perce Reporting Area

Most of the Nez Perce RA was not flown in 2007. The most complete surveys prior to 2008 were conducted in 2006. That year, MPB-caused mortality had declined to 135,000 LPP on fewer than 40,000 acres. Now in 2008, the infested area recorded was 273,000 acres, but intensity had declined to barely more than one tree per acre killed (321,000 trees). MPB-killed PP dropped from less than 1,000 trees on 730 acres in 2006 to 140 trees on 230 acres in 2008. FE-killed GF were recorded on 73,500 acres, with 35,300 dead GF. Those figures in 2006 had been but 1,200 trees on 400 acres. WBBB-killed SAF increased from 350 trees on 65 acres in 2006 to 3,600 trees in 7,500 acres in 2008. DFB-caused mortality also increased to 6,200 trees on 5,400 acres from 4,800 trees on 1,050 acres in 2006. And WPB-caused mortality, reported as about 200 PP on 110 acres in 2006, increased to 5,500 trees on 5,000 acres in 2008. IPS killed 2,000 PP on 350 acres in 2008.

What little data had been collected in 2007 showed 450 GF killed by FE on 400 acres; 400 PP killed by IPS on 60 acres; and WPB had killed almost 500 PP on 730 acres.

Salmon River RD:

Large groups of LPP, killed by MPB, were mapped north and east of the Salmon River, especially heavily infested stands were noted east of Lucile. South of Grangeville, large groups of FE-killed GF were recorded. West of Salmon River, scattered small groups of FE-, DFB-, and WPB-caused mortality were observed.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	2	--	14	3	--	--
Trees 07	--	15	--	10	6	--	--
Acres 08	46,698	2,841	3,603	8,162	3,499	29	0
Trees 08	19,836	3,028	1,740	4,673	2,468	217	0

Clearwater RD:

Most notable bark beetle activity found on the District was large groups of GF, killed by FE. Those were mapped generally south of Grangeville.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	--	--	--	--	--	--
Trees 07	--	--	--	--	--	--	--
Acres 08	4,083	188	38	28,397	61	0	0
Trees 08	2,476	542	72	10,392	184	0	0

Red River/Elk City RD:

Many large groups of LPP, killed by MPB were mapped in eastern and southern portions of the RA. Largest groups were east of Red River and north of Dixie. Towards the west and north, FE-infested GF stands were more common. Some of those groups were quite large.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	--	--	--	--	--	--
Trees 07	--	--	--	--	--	--	--
Acres 08	146,520	1,594	2,370	10,987	22	0	0
Trees 08	199,240	939	639	6,790	68	0	0

Moose Creek RD:

Numerous large groups of MPB-infested LPP stands were noted in northern and central portions of the RA. Larger groups were found northeast of Red River, and south of Moose Creel landing strip. Other significant groups were located near Big Fog Mountain and north to reporting area boundary, several miles south of the Lochsa River.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	--	--	--	--	--	--	--
Trees 07	--	--	--	--	--	--	--
Acres 08	**57,131**	**303**	**1,461**	**935**	**217**	**0**	**0**
Trees 08	**52,256**	**126**	**1,282**	**715**	**50**	**0**	**0**

Indian Reservations

Coeur d'Alene IR:

In 2007, small groups of PP, killed by WPB, MPB and IPS totaled about 1,400 trees and covered portions of 465 acres (more than half the total was attributed to WPB). FE-caused mortality increased in 2007, to 1,900 trees on 1,550 acres (only 860 trees on 230 acres were observed on the part surveyed in 2006). DF beetle was recorded at virtually endemic levels—70 trees on 35 acres.

In 2008, the most frequently encountered bark beetle-caused mortality was FE-killed GF—more than 5,500 trees were killed on 6,200 acres. WPB killed 1,300 PP on 850 acres; and DFB killed 400 DF on another 370 acres. Other beetle-caused impacts were much less significant.

Widely scattered, small groups of FE- and WPB-killed trees found throughout reporting area. Largest groups of FE-killed GF were mapped just south of Coeur d'Alene Lake, west of St. Maries.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**26**	**34**	**0**	**1,554**	**397**	**43**	**0**
Trees 07	**110**	**71**	**0**	**1,923**	**842**	**426**	**0**
Acres 08	**53**	**368**	**0**	**6,211**	**845**	**93**	**0**
Trees 08	**143**	**404**	**0**	**5,563**	**1,318**	**870**	**0**

Nez Perce IR:

Only a small part of the Reservation was flown in 2007—that portion from Winchester, Craigmont, and Mohler, north to the Clearwater River. In that area, 200 FE-killed GF were found on 150 acres, WPB had killed 160 PP on 70 acres, and DFB-caused mortality totaled but 6 trees on 6 acres. BWA had affected trees on 20 acres.

In 2008, much more of the Reservation was flown, and significantly larger amounts of beetle-caused mortality were recorded. FE-killed GF, totaling 24,000 trees were mapped on 52,700 acres. MPB-killed LPP wee noted on 4,900 acres and totaled 2,750 trees. MPB also killed another 140 PP on 40 acres. IPS also killed 2,400 PP and WPB killed an additional 3,200 PP. Total infested acres for those beetles were 420 and 3,200, respectively. DFB-caused mortality was recorded on only 95 acres, totaling 330 trees.

Large groups of FE-killed GF were mapped south and west of Cottonwood—mostly on State and private lands near the IR. Smaller amounts of WBP-killed PP were noted in that same general area. Many large groups FE-killed trees were noted west of Winchester. Also, numerous groups of LPP, killed by MPB, were mapped around Soldiers Meadow Reservoir. WPB-killed PP was widely scattered throughout the Reservation.

Bark Beetle-Infested Acres/Estimated Number Faders (Trees Killed Previous Year)

	MPB	DFB	WBBB	FE	WPB	IPS	ESB
Acres 07	**0**	**6**	**0**	**154**	**66**	**0**	**0**
Trees 07	**0**	**6**	**0**	**197**	**156**	**0**	**0**
Acres 08	**4,935**	**94**	**0**	**52,703**	**3,201**	**421**	**0**
Trees 08	**2,886**	**332**	**0**	**24,076**	**3,232**	**2,376**	**0**

BARK BEETLE-RELATED SPECIAL PROJECTS—IDAHO

Verbenone projects, targeted at protecting LPP in forested strips between runs at Lookout Ski area, conducted from 2003-2007, have been completed. An accomplishment report is forthcoming. For additional information, contact Carol Randall, CFO.